

PROCEDURES FOR ESTHETIC OPTIMIZATION IN MAXILLAR DENTAL IMPLANTS.

Immediate dental implants placement after the extraction of the central maxillary teeth. Clinical Case Presentation.

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Summary

There is nothing new for dentists in offering their patients treatments which are more esthetic, more effective and that take less time. On the other hand the expectations of the patient in the esthetic zone, especially when replacing the two upper central incisors, are always very high, where they require restorations that are identical to their natural teeth or virtually invisible. As experienced dentists who know how difficult it is to restore implants in the **esthetic zone**, we have performed a series of procedures to obtain restorations very close to the natural dentition. In this article, we present the rehabilitation of a patient who suffered the loss of the upper central incisors, and who underwent dental extractions, immediate placement of endosseous implants and immediate timing of the implants. This article also describes the steps to achieve optimal restoration, where we minimize damage to the gingival tissue, without an incision, without lifting the flap, without suturing the tissues, always following the principles of osseointegration and implant placement in the esthetic zone.

Introduction

The development of oral implantology, thanks to the large number of studies and clinical cases documented, allows us to offer our patients better options from a functional and esthetical point of view. In this case a patient had a vertical fracture of maxillary central incisors and would not be subjected to wear off their neighboring teeth or be condemned to use a removable partial denture. In these patients, one of the excellent alternatives that can be offered are dental implants. The novelty of this treatment is the dental extractions and then the immediate placement of implants, as well as the placement of temporary crowns on implants at the time of surgery. Then comes the waiting of 4 to 6 months, the period of osseointegration, in order to make the final restoration and the charging of the implant.

Recent advances in implant studies have demonstrated that the immediate timing is effective and does not compromise osseointegration of dental implants, which saves time and opens the possibility of giving the patient a temporary and effective option to resolve his esthetic problem. Following all the necessary principles of occlusion for such cases.



Fig.1. Metal porcelain crowns, 1.1, 2.1



Fig.2. Gingival Inflammation and Fistula

Body

It already has been proven in hundreds of studies that implants are osseointegrated into the body. Once this stage of trial and error is surpassed, we can offer our patients a highly predictable treatment in ideal cases. The challenge now is to get beyond the limits of dental implants to provide better treatments, which are more esthetic, functional and take less time.

Among the new features of the treatment, there is the possibility to give the patient an implant surgery without incisions or flaps, without sutures and without the unpleasant experience of using a removable acrylic provisional, providing a less traumatic procedure for the patient and with a more favorable post surgery result. Besides all these advantages, it gives the option to place a temporary crown to return immediately from the esthetic to the implant placement, without waiting the usual time of osseointegration.

One of the implants that is approved by the FDA (Food and Drug Administration) to perform this type of treatment is the **Tapered Screw Vent** from the commercial house **Zimmer Dental**. The protocol for this process mainly states that immediate timing and charging can be done as long as they have a good initial stability and appropriate occlusal charge. This is achieved at the moment the tooth extraction is performed conservatively, trying to keep as much of the remaining bone and to achieve primary stability of implants, which in the case of not succeeding, we must follow the traditional protocol and wait 4 to 6 months, the osseointegration of the implants, to give them their functional charge.

There are theories that suggest a better quality of osseointegration of implants subjected to functional charge, as they believe, according to the studies, that this stimulus is able to trigger a series of biological reactions that accelerate the initial healing process causing significant structural changes in bone which receives the implants; while also providing esthetic and functional benefits, as is the case with the bone around natural teeth which if subjected to a normal charge apposition occurs or the maintenance of the structure, otherwise it is the opposite case when then functional charge is not given, and bone reabsorption occurs.

Contraindications for an immediate timing procedure would be primarily the need for grafting and placement of a membrane, just like any periapical pathology that compromises the initial stability and precise three dimensional position of the implant.

Within the biggest advantages we can find the use of a permanent provisional restoration that meets the aesthetics and often even better than the restoration the patient presents at the time of surgery, the removal of the second phase surgery and more importantly gingival healing, which begins from the moment of provisionalization, this gingival tissue will be fully ripe, firm and keratinized at the time of performing the final prosthetic restoration.

Clinical Case

40 year old female patient, known healthy, with endodontic treatment and casted poste and core, plus metal porcelain crowns in the upper central incisors, pain and mobility type II, plus a vertical fracture of the root of 2.1 and a small gingival recession, also the 1.1 piece presents increased mobility and a marginal gap in the metal-porcelain crowns it has. In x-ray observations we find healthy periapical tissues without bone reabsorption, bone loss in 2.1 and 1.1, enough to contraindicate the removal of the crowns and pre-existing poste and core and its retreatment as the placement of new postes, in an adequate length, would affect the apical seal of the root canals. It was decided that the best treatment is the extraction of both pieces and the placement of implants before any further gingival recession that will further complicate the esthetic factor of the case. The patient is offered rehabilitation with endosseous implants immediate placement with provisional acrylic crowns, so, 4 to 6 months later; we can rehabilitate the implants with their final crowns.



Fig.3. Extraction of the Central Maxilla.



Fig.4. Immediate placement of the implants.

Dental Extraction

The extraction of the central incisors is one of the most important keys of the process as this will define the amount of bone remaining in the alveolar socket to place the implants, which provides or does not provide the initial stability, as well as the cervical subsection level at which they should be placed. This can directly affect the esthetics that can be achieved because it will determine the position of the gum, especially if we speak of the interdental papilla, and the emergence profile of the crown.

To perform the extractions we used a surgical elevator, placed in the palatal aspect, is an important tool for the extraction of the teeth, causing minimal damage

to the bone. At this point, we discover a vertical fracture in the root of upper left central, which confirms that the diagnosis and treatment of choice was correct.

Implant placement

Once we extract the teeth and have a good amount of bone, we proceed with the placement of dental implants. We use the traditional protocol. In most cases where place implants immediately after an extraction, the use of wide diameter implants gives us better results, because if we take into account the law of Per Ante which cites "The total area of the periodontal membrane of the pillar must be greater than or equal to the area of the tooth to be replaced". So if we take this into account the total surface area of a maxillary central incisor is 204mm². Zimmer Dental offers a comparison chart of the surface area of the implant depending on the length and diameter, in which the implant of 4.7mm in diameter and 13mm in length has a surface area of 259mm².

Implant type	Implant length (mmL)	Surface area of the implant (mm ²)
Tapered Screw Vent	8	150
4.5 Platform diameter	10	195
	11.5	226
4.7 Implant diameter	13	259
	16	322



For this case we used 2 **Tapered Screw Vent**[®] endosseous implants of 4.7mm in diameter by 13mm long (**TSVWB13**). To achieve a more accurate measurement of the length in which we must work on, one can measure the length of the roots of the teeth that were extracted using a surgical drill.

Protocol for the implant placement

The alveolar sockets of the extracted teeth is where the osteotomy begins with a surgical drill of 2.3mm in a depth of 13mm, taking into account, that we must maintain the length axis of the piece. Then we use a drill of 2.8mm in the same length and so on until we reach the drill of 4.4mm, which is the final drill used in the osteotomy to place an implant of 4.7mm in diameter.

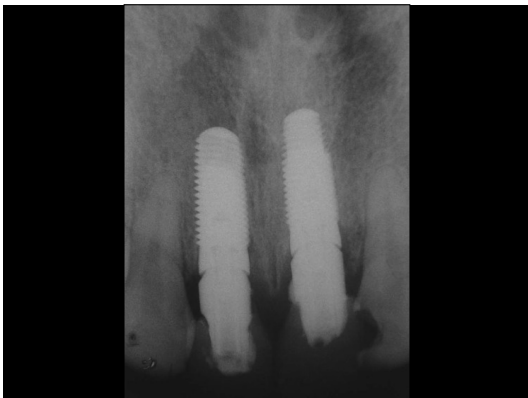
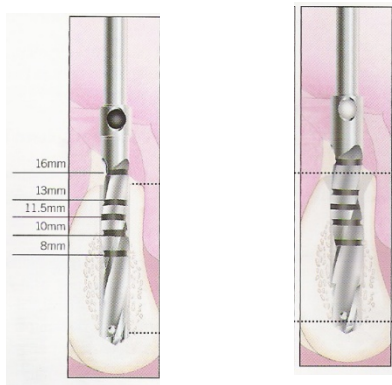


Fig.5. Rx. Post-op. Immediate with provisional posts.



Fig.6. Temporary crowns, one week post-op.

Immediate implant placement

Once the osteotomy is done, we proceed to place the implant at the surgical site. After obtaining an adequate initial stability, the immediate placement of the implants can be performed, acrylic provisional crowns were made in the laboratory for better esthetic results.

The implant holders are removed, which in this case will serve as temporary abutments. These implant holders are mounted on the analogs and prepared outside the mouth while taking into account the position of the implant, the amount of gum and the height at which they were placed. Once prepared, the temporary pillars placed in the mouth and the implants are screwed. Subsequently the acrylic crowns are placed, which are previously manufactured according to the anatomy

obtained from the diagnostic wax. The pillars are blocked using a cotton swab, Cavit or Fermit® to prevent acrylic and cement from entering the screw hole. We exceeds the provisional crown with self-healing acrylic and we place them on the pillars, regularly reviewing and removing the crown of the pillar during the healing process of acrylic to prevent the crown from having any undesired retentions. Once the acrylic has polymerized, any excesses are trimmed, the marginal fit is checked, and the occlusion is tested, one of the most important steps of the treatment because, in an immediate timing, the crowns should not have any occlusal or inter-proximal contact with adjacent or antagonists pieces; the success and the osseointegration of the implant depend greatly on this fact. After that we proceed to conduct a thorough polishing with medium and fine pumice and a big roll of fleece in an engine laboratory, especially in the areas of the crown that will be below the free edge of the gum, in order to obtain a better healing and to prevent gingival inflammation. The anatomy of the crowns, especially in the subgingival portion, should provide an adequate support to the interdental papillae, without there being too much pressure or that the surroundings will not allow too much plaque accumulation.



Fig.7. 4 months post cx. of implants and imm. timing.



Fig.8. Healed gingival tissue without fistula.

CONCLUSIONS

The loss of teeth and above all the loss of the esthetic zone is itself a very traumatic experience for patients who value the esthetics of their smile. Oseintegrated implants with an immediate timing allow the patient who is going through that experience a better acceptance of the treatment, for his appearance while leaving our office is almost identical to the one they had when they entered. This is a safe treatment with a high success rate, which also helps guide the healing of soft tissues in the extraction zone to control and maintain the interdental papille, a very important factor in the esthetics zone.



Fig.9. Finished metal porcelain crowns, excellent gingival healing

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